

Claims:

1           25. A laser beam ophthalmological surgery method for  
2 treating presbyopic in a patient's eye by ablating the sclera  
3 comprising the steps of:  
4           selecting a pulsed ablation laser having a pulsed output beam  
5 of predetermined wavelength;  
6           selecting a beam spot controller mechanism for reducing and  
7 focusing said selected ablative laser's output beam onto a  
8 predetermined spot size on the surface of the cornea;  
9           selecting a scanning mechanism for scanning said ablative laser  
10 output beam;  
11          coupling said ablative laser beam to a scanning device for  
12 scanning said ablative laser over a predetermined area of the  
13 corneal sclera; and  
14          controlling said scanning mechanism to deliver said ablative  
15 laser beam in a predetermined pattern in said predetermined area  
16 onto the surface of the cornea to photoablate the sclera tissue  
17 outside the limbus, whereby a presbyopic patient's vision is  
18 corrected by expansion of the sclera.

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1           26. A laser beam ophthalmological surgery method for  
2 treating presbyopic in a patient's eye by ablating the sclera in  
3 accordance with claim 25 in which the step of selecting a pulsed  
4 ablation laser includes selecting a pulsed ablative laser having a  
5 predetermined wavelength between 0.15 - 0.32 microns.

6           3 27. A laser beam ophthalmological surgery method for  
7 treating presbyopic in a patient's eye by ablating the sclera in  
8 accordance with claim 25 in which the step of selecting a pulsed  
9 ablation laser includes selecting a pulsed ablative laser having a  
10 wavelength between 2.6 and 3.2 microns.

1           4 28. A laser beam ophthalmological surgery method for  
2 treating presbyopic in a patient's eye by ablating the sclera in  
3 accordance with claim 25 in which the step of selecting a pulsed  
4 ablation laser includes selecting a solid state laser.

1           5 29. A laser beam ophthalmological surgery method for  
2 treating presbyopic in a patient's eye by ablating the sclera in  
3 accordance with claim 25 in which the step of selecting a pulsed

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1 ablation laser includes selecting a pulsed gas laser having a pulse  
2 duration shorter than 200 nanoseconds.

1 *C* 30. A laser beam ophthalmological surgery method for  
2 treating presbyopic in a patient's eye by ablating the sclera in  
3 accordance with claim *25* in which said the step of selecting a beam  
4 spot controller includes selecting a pulsed ablative laser having  
5 a focusing lens with focal length of between 10 and 100 cm selected  
6 to obtain a predetermined laser beam spot size having a diameter of  
7 between 0.1 and 0.8 mm on the corneal surface.

1 *T* 31. A laser beam ophthalmological surgery method for  
2 treating presbyopic in a patient's eye by ablating the sclera in  
3 accordance with claim *25* in which the step of selecting a beam spot  
4 controller includes selecting beam spot controller having a  
5 focusing lens with cylinder focal length of between 10 and 100 cm  
6 to obtain a laser beam spot having a line size of about 0.1-0.8 mm  
7 x 3-5 mm on the corneal surface.  
*A,*  
*Corneal*

1 *G* 32. A laser beam ophthalmological surgery method for  
2 treating presbyopic in a patient's eye by ablating the sclera in  
3 accordance with claim *25* in which the step of selecting a scanning  
4 mechanism includes selecting a scanning mechanism having a pair of  
5 reflecting mirrors mounted to a galvanometer scanning mechanism for  
6 controlling said laser output beam into a predetermined pattern.

7 *G* 33. A laser beam ophthalmological surgery method for  
8 treating presbyopic in a patient's eye by an ablating laser beam in  
9 accordance with claim *25* in which said ablative laser is delivered  
10 to the surface of the cornea by an optical fiber.

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12 *D* 34. A laser beam ophthalmological surgery method for  
13 treating presbyopic in a patient's eye by ablating the sclera in  
14 accordance with claim *25* in which the step of selecting a scanning  
15 mechanism includes selecting a hand-held optical fiber coupled to  
16 the ablation laser for scanning said laser output beam into a  
17 predetermined pattern.

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